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# BULLETIN

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**Perceptions of Gaps in Science and Technology in Tamil Nadu**

**Super '301' and the Uruguay round of Trade Negotiations**

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# EDITORIAL - SOME HIGHLIGHTS

## I. General Economic Scene

### State

#### Planning Commission

There were two meetings of the State Planning Commission in August. At the first one chaired by the President, the Chief Minister, a number of important decisions were made. It was decided that the Departments to whom the Draft Eighth Plan had been sent will send their comments through the Secretary, Planning and Development by August 25 to Planning Commission. The Commission will revise the draft Plan and submit it to the Council of Ministers for Approval, after which with small changes as may be suggested by the Council, the Plan will be finalised and will be available to all concerned in the Union government and the state for appropriate follow up action. There was a thorough review of the draft chapter on Industry which was approved with some editorial changes. The main thrust is for the state through SIPCOT and TIIC to provide the infrastructure for the development of industries by the private corporate sector, with TIDCO providing funds where necessary. The second meeting of the Commission was devoted to the means of implementing the government decision to decentralise planning to the block level and for this purpose discussion centres on the methodology to be followed in block level was agreed upon and there is to be a further meeting to continue and finalise these two issues — methodology and principles of financial allocations to the blocks for submission to government as requested by it.

#### Climate and Prices

In August, the south west monsoon was active in some districts as referred to in the last issue of the Bulletin

but not in others. On the whole the state as at the end of August is in a deficit situation as far as the south west monsoon rains are concerned. Madras and Chengai Anna district had many days of rain, with two rather heavy ones. All the districts are really looking forward to the North East monsoon to meet the water needs of the people and of agriculture and industry. On prices, which the state shared with the rest of the country the inexorable rise in prices — both the whole sale or consumers — in August the price of tea and coffee soared to levels making them a luxury, as did the price of pulses, boiled rice, edible oils etc. the CSO report on it is not available beyond what was reported in July Bulletin.

## Power

The power situation in August in the State appeared normal but there were serious imbalances that the state faces in the power situation which might affect the power supply in the rest of the year. First, the inflow into the states hydel reservoirs in July was about one third of what it was in July 1989, when the inflow was the equivalent of 1404 million units where in July of the year it was equivalent of 540 million. The Tuticorin plant as pointed out in the last issue of the Bulletin is receiving less than half of its monthly supply because the Bihar and West Bengal coal mines have been flooded by the south west monsoon and the Haldia port from where the coal is loaded for Tuticorin is under repair. On top of all this, NTPC's Ramagundam thermal plant is generating about one third of its installed capacity — at 740 MW out of the capacity of 2100 MW resulting in a sharp drop in Tamil Nadu's share of power. The government and the Tamil Nadu Electricity Board have been taking emergency action — urging Haldia to complete its repairs by the end of the month, August and pumping out the waters from the Eastern Coal fields so that the normal amount of coal could be available to Tuticorin from September. In the meanwhile the increased coal arrivals from Paradeep and Vishakapatnam are being shared with Tuticorin thermal. Further the Mettur Thermal Station with its 420 MW capacity is an addition this year which was not available earlier and is a helpful standby. For Madras city TNEB has increased the capacity of 2 power transformers to give the city more stable power. But overall the state faces a deficit situation in the long run and has to live on a hand to mouth basis. In order to recover the high cost of power generation at the Basin Bridge station, the Tamil Nadu Electricity Board has made an innovative offer to guarantee uninterrupted power supply to these industries which are agreeable to pay a surcharge on all the power they consume. In August the four 2 MW hydel micro project was commissioned at lower Bhavani dam in the Periyar district.

The power situation in the country is normal thanks to the plentiful south west monsoon. In Karnataka the increased inflow into the Sharavathy and Kali reservoirs has led the government to announce that the power cut on the all electric home consumers will be lifted and there will be a relaxation of the power cut on most categories. This will be helped with the commissioning of the second unit of Chakra and the Raichur Thermal plant and the upgrading of 10 generating units at Sharavathy hydel. West Bengal which faces a serious shortage of power against a rapid increase in demand, is

entering into agreements with the State Electricity Board of Orissa and Assam, especially to meet the peak hour demand and that of the coming Durga puja festival. In order to meet the perennially power short state of Jammu and Kashmir, the union government has declared the Rs. 1200 crores Dulhasti hydro electric project as "a project of national importance". This should help this 10 year old project to be speeded up and meet the needs of the power starved industries, agriculture and homes in the state. The government officially conforms that of the 48,000 MW additional capacity needed in the VIII Plan, resources, it is hoped, will permit only 38,000 MW at an investment of Rs. 1,25,000 crores. It has therefore said that the thrust should not be on the generation of more electricity, but of maximum use of available resources through a) improving the generation of the existing thermal and hydel plants, b) increasing PLF of thermal plants above the present 55 per cent, c) reducing transmission and distribution losses which now stood at 22 per cent, d) energy conservation measures which will make available an additional 5000 MW, and e) using the concept of management of energy demand so that it suits the availability.

**Water**

The central water commission reports that unlike the rest of India as at August, all the major reservoirs in the state are below normal which if not compensated in the remaining weeks of August and September will pose serious hydel problem. From mid August the rivers and reservoirs in AP and Andhra were full, reaching the danger level. Sharavathy in Karnataka and Godavari and Krishna in AP are rising fast and due to heavy rains in the catchment areas. One effect is that Mettur's inflow has jumped from 3000 to 13000 cusecs.

**PDS & Buffer Stock**

The Public Distribution System in the states comprising 21,134 fair price shops is functioning to meet the monthly offtake of rice at 88,000 tonnes. There is an additional 20,000 tonnes of rice also used for the midday meal scheme. The offtake has fallen from 1.65 lakh tonnes during the lean season and is a mark of the availability of rice in the open market. The government reports that its rice stock as at August is 6.78 lakh tonnes, against its target of 5 lakh tonnes reported in the last issue. On this basis, the government announced its decision that family cardholders who were drawing 12 kg of rice a month, will now get 5 more kgs a month till March 31, 1991, when the lean season starts.

**Special Programme for Rural Basic Services**

The state government has launched a time bound project for provision of all basic amenities in the rural area during the Eighth Plan. With a financial outlay at Rs. 75 crores for the current year, 1990-91, it is providing villages with all weather roads, construction of building for 693 primary schools, 6481 village and 88 town panchayat offices, 3458 health sub centres, implementing the drinking water supply scheme and standardisation of 6016 minor irrigation with ayacuts between 500 to 1000 acres. All these routes are being upgraded to bitumen and metal roads.

### Transport

The World Bank mission study on Madras city plans is favourable for the building of a Rs. 100 crore bus way which will be exclusive and elevated along Anna Salai.

## National

### Plan

The only August meeting planned for the National Development Council could not be held because of the internal problems within the government and so the proposed revision of Gadgil Formula is still hanging fire. The last issue of the Bulletin referred to the main elements in the formula being considered for revision. There is general agreement on revision because the formula was proposed and accepted by the National Development Council in 1968 and since then the changes that have taken place in the economy and inter-state developments have made the formula in its application somewhat regressive, favouring the richer and advanced states and penalising the poor and backward states. The formula has stood the test of time because its logic and fairness was accepted by quite strong and devise group of NDC comprising Messers CN Annadurai, Brahmananda Reddy, MN Namboodripad, VP Naik, Mohanlal Sukhadia and Charan Singh. And the strength of the proposed revision this time is that the Planning Commission has put into practice innovation of working with the states as partners. Each of the 9 members of the Planning Commission has visited a state and discussed the proposal thoroughly with the Chief Minister. This method of working by the Planning Commission has neve been done and is to be welcome The main changes proposed and neede are around the revised weightage tc be given to Population, the tax effort which also requires a new definition, and per capita income. The Planning Commission using a step approach aggregating programme that are entirely rural, apportioning total outlays for programmes jointly benefiting both rural and urban areas between the two on the basis of specific consideration that varied between sectors and omitting all programmes which had no benefits for the rural areas — concludes that in the Seventh Plan the proportion of the rural sector was 45 per cent. The Union's share was 34 per cent (Rs. 44,689 crores) against the planned 32 per cent and the states' share was planned 60 per cent (Rs. 54.755 crores). Outlay for the rural compared in the annual Plan for 1990-91 has been raised by 13.5 per cent (Rs. 12,222.18 crores) and budgetary support for it by 10.8 per cent (Rs. 8465.51 crores). So the budgetary support has increased *from 44 per cent in 1989-90 to 49 per* cent in 1990-91, the rural sector investment as part of the Annual Plan ontlay rising from 30.94 per cent to 31 per cent. This means that the states share must increase to 61 per cent. The Planning Commission announces that it is stopping making token allocation for new projects in the Eighth Plan period except for projects financed by the World Bank. This will both meet the problem of resource scarcity and ensure that the ministries and departments will not pack as many projects as they can for the plan period and so ensuring a selective approach to high priority projects which will be fully funded. The World Bank estimates that India's GDP will grow by 5 per cent in 1990 &

5.3 per cent in 1991 the country's per capita income increased by 2.9 per cent and 3 3 per cent in 2 years.

## Prices

Inflation continued some what inexorably in July at over 1 per cent, the wholesale price index standing at 178.7 on July 28. The annual rate of inflation on a point to point basis moved upto 9 per cent from the previous month's 8.9 per cent. The July inflation was once more due to the rise in primary articles price which was 2.9 per cent with cereals and prices moving upto 3.1 per cent and pulses to 3 per cent, compared to the rise of 0.3 per cent for fuel, power and light and 0.9 per cent for manufactured products. Similarly the consumer price index for industrial workers rose to 182 during June 1990 which was an annual rate of inflation of 8.82 per cent. This inexorable rise in prices was the first issue discussed in the monsoon session of parliament, when all parties including the government expressed their worry and concern over this trend. The government is making various attempts to stop this inflationary pressure. It has ordered 10 per cent across the board cut in the union budget which could save Rs. 4000 to Rs. 5000 crores : it has cut foreign travel by 20 per cent and some commerce ministry office and staff are being reduced ; the real problem is that the major part of the government expenditure is not reduceable — like the Rs. 20,850 crores that has to be paid as interest on public debt ; the Rs. 16000 crores on defence services (the Arun Singh Committee on Defence expenditure has just started work but its recommendation and the result of putting them into effect will not help the 1990-91 inflation), the non plan expenditure is Rs. 64,343 crores and 10 per cent of this, even if effected is not much; the public expenditure is Rs. 1400 crores, the external affairs Rs. 6934 crores, the number of government officials have gone up by 1.6 lakh to a total of 41.70 lakhs all of which can be reduced but is never done; the farm loan waiver will cost near Rs. 3000 crores and this is a sacred cow ; projects can be postponed from this year but not on across the board postponment basis ; the petrol bill of the government which is 50 per cent of the total petrol bill of the country can be cut but is not, another source of saving is DA which should, as in other countries, set for a forward date and not retrospectively as we do ; on the other hand the government is raising procurement/support prices as it has done twice this season ; the release of an additional allocation of edible oils which can lower prices but may call for imports ; it has abolished retail licenses for cement distribution in the hope that the current price will conform to the agreed price ; similarly it has asked that tea be made available in economy packs to 10 million kgs to reduce its prices. There will also be action by RBI on the supply of money and credit, and if the government keeps to its promise the RBI credit to grovenment will be limited to what has been budgeted and will not be a further additional source of increased reserve money supply.

## Union loans

The union announced on August 8 the issue of 4 loans aggregating Rs. 2100 crores. The subscription are to be received on August 20. The interest on these loans is 5.50 per cent to 6.50 per cent because they are secured loans from RBI and the public sector banks.

### Stock Exchange

The major event in the Bombay Stock Exchange in August was the shooting up of the share index of sensitive prices beyond its historic surge to 1000 points at July end to 1106 in early August. The Governing Board of the Stock Exchange started by imposing stiff regulatory measures such as a complete ban on fresh forward transactions and a 20 per cent daily margin on all cash transactions, which as a result, the sharp reactions of the brokers and jobbers were relaxed by making the daily margins payable only on 25 volatile cash scrips and not on all and by doubling the jobbing limits in respect of 15 specified shares. There is no doubt that this flurry has been due to speculative activities and for the restrictions have cooled down the market, moderated the boom in pivotals and prevented a payments crisis but behind the boom is the unexpectedly sharp rise in corporate profitability during the year ending March 1990 which the annual reports of the companies brought out, along with the proliferation of mutual funds, offshore funds etc. leading to excess liquidity in the secondary market stimulated by the dullness in the primary market. There are two lessons to be drawn from this July/August experience. First, that the market cannot function normally with curbs and restrictions because operators and investors are unwilling to build fresh positions in a controlled market. Second, the frequent imposition of trading curbs is hampering the growth of the secondary market when the volume of trading is large and growing. So the stock exchange authorities should evolve a new set of rules to ensure the smooth functioning of the market, perhaps starting with provision for a weekly settlement of forward deals. On August 18, the government clarified that the minimum gap between issues of capital by the same company will not apply if one of the issues is being made on a private placement basis as it will not come on the market.

### Economy

Two important events in the economy in August call for comment. First, the economy's external position is deteriorating steadily and sharply with foreign exchange reserve being equal to 8 weeks imports. The balance of payments situation might further worsen with the rise in oil prices consequence on the Gulf war. Further and consequently India is having difficulty in floating her commercial paper with the international bond market seen in the spreads on Indian loans which were less than LIBOR are now around 0.35 per cent above and the rise in the spreads on Indian paper in the secondary market by 65 to 75 basic points, so India has called off to be floated in the European and Japanese markets because of the high spreads, but other loans have gone through. In this context, what about a loan from IMF? So far the IMF loan was not preferred because its interest rate was higher than the commercial market rate and the repayment period shorter, apart from the conditionalities that IMF imposes. Now with the commercial rate for India having risen, the IMF loan possibility needs to be looked at again, not like the previous SDR 5 billion loan, which in any case IMF may not approve but of the order of SDR 1 billion. Even this will be based on certain conditionality. Some credits have been obtained from IMF upto $ 600 million which is not a loan.

This means that the way to meet the unfavourable external environment is to execute an overall internal economic policy reform, whose first step have been taken in the various measures to cut government expenditure, curb petroleum products consumption and reduce imports. The other element of this package now needing attention are public sector reform, pushing energy conservations and further changes in trade policy. The other major issue in August was the government decisions to give effect to the Mandal Commission report (which had been under consideration by three governments, since December 1,1980 when it was submitted) under which 27 per cent of jobs in the government and public sector enterprises are reserved for the "socially and economically backward classes". The government announced that in the first phase the castes commission to the Mandal list and states lists of backward class will be used for the reservation. 15 per cent has been reserved for the scheduled castes and 7 per cent to the scheduled tribes and with this 27 per cent for other backward classes, the total reservation is 49 per cent, to conform to the Supreme Court judgement that reservation should not exceed 50 percent. There have been varied reaction to this decision from violent demonstration by students in Bihar, MP and other states to warm welcome for it by others. There is a problem that all those below the poverty line which according to the official reckoning is 37.5 per cent in 1987-88 may not be covered by the reservation if they do not belong to SC, ST and the backward classes, while some well above the poverty line may enjoy the reservation if they belonged to that group. While this contradiction is not going to be corrected, the government got the assurance of support from its opposition for its proposal to bring in a constitutional amendment under which those below the poverty line are represented in parliament and the legislatures so that they can ensure that all the poor, whatever caste they belong to, are afforded reservation and other help. There was also a decision in August that the recommendations by the Bhanu Pratap Singh Committee and the Sarad Joshi committee to oppose the Hanumantha Rao committee's recommendation on the basis of computing procurement prices (by including the market wage and not the statutory wage) which was accepted by the Agricultural ministry referred to in the last issue of the Bulletin, is to be reviewed by the council of ministers.

**Industry**

In the industrial field five development in August may be noted. First, the union government announced a new national mineral policy for non fuel and non atomic minerals under which 13 strategic minerals — iron ore, manganese ore, chrome ore, sulphur, gold, diamond, copper, lead, zinc, molybdenum, tungsten ore, nickels and the platinum group — are reserved for exclusive exploitations by the government. In a sense this formalises existing practices. Second, the government announced in parliament that it would gradually bring a parity in prices of industrial and agricultural goods as a means of controlling soaring prices. However, at the moment such a decision might have an opposite effect. Third, the government announced a liberalisation of the excise relief policy to rehabilitate sick units as part of a BIFR package. In this context the first issue that BIFR should attend to is the recovery of the Rs. 7000 crores locked up in sick

industrial units and not simply in rehabilitating and liquidating them. Fourth, the Small Industries Development Bank of India (SIDBI) announces that in the first quarter of the year it has disbursed financial assistance to small units of Rs. 450 crores. Fifth, the sugar industry — both in the cooperative and private sector — has come out against the new sugar licensing policy which reduces the spatial distance between two factories and removes the requirement of a certificate of cane availability for setting up new units, as these will contribute to increased sickness of the industry. Because of poor management, the state has to subsidise levy sugar to the extent of Rs. 300 crores this year. This can be made up by raising the price of levy sugar parallel to the rise of the statutory minimum price. The sugar industry has also asked for a higher price free sale sugar to oppose its loss of Rs. 300 crores at current prices. The key for the proper working of the industry is cane availability and if this is weakened, the industry and the mills will incur losses. The computer industry in India states that it has covered the gap between Indian computer industry and the rest of the world. Product technology has produced some items like some peripherals though there is still a gap in manufacturing technology. A review of the first quarter performance by the ministry of programme implementation shows that power generation is 12 per cent short of the target, coal by 9.3 per cent and steel by 7 per cent. On the basis of which the ministry forecasts for the year a 10 per cent shortage in electricity generation, a decline in coal production by 10 million tonnes and in saleable steel by 7 lakh tonnes.

**Public sector Enterprises**

The Prime Minister stated at a meeting of the Public Sector units that if the units fail to meet the investment targets of the Eighth Plan in the critical sectors, the country may be forced into a Plan holiday which would be a retrograde step. The ministry of Industry at the concluding session of that meeting stated that the government has decided to allow public sector undertakings to raise equity from the public. This is a small first step in the privatisation of the sector, particularly of the equity open to the public is from the profit making enterprises. With a view to reducing delays in the public sector projects, the industry ministry has proposed to the council of ministers that public sector investment upto Rs. 100 crores, in place of the present Rs. 20 crores be exempted from obtaining clearance from the Public Investment Board. It also announces that the Council of Ministers has decided that Memorandum of Understanding will be signed with 100 public sector undertakings to improve their profitability. The union government also announced that competitive public sector enterprises can raise their equity through public participation.

## National Production Front

**Steel**

Bokaro is facing acute shortage of steel on account of which it lost 40,000 tonnes of hot metal in July. Despite this and the falling SAIL coal stocks, all 5 integrated steel plants at Bhilai, Durgapaur, Rourkela, Bokaro and Burnpur were able to record a 6 per cent increase in crude and saleable

production in July, with Bhilai leading in production during April-July 1990 3.05 lakh tonnes of hot metal, 2.96 lakh tonnes of crude steel and 2.20 lakh tonnes of saleable steel. SAIL reports that the DVC power crisis has caused heavy production cut and loss in Bokaro. It reports also that it will continue the tradition in 1986-87 to reserve all its resources in totalling. For the Eighth Plan it plans to generate Rs. 4600 crores.

### Crude

With Gulf disturbances and the Iraq-Kuwait involvement, crude output has become uncertain and crude prices highly volatile. India had plans to import 80 per cent of its crude needs in 1990-91 at 18.60 million tonnes and 7 million tonnes of petroleum products. This was estimated to cost Rs. 6400 crores but with prices having risen from $ 18 to 21 per barrel as of August 12, the import bill has shot up to Rs. 8000 crores. This amount of foreign exchange is not available and so domestic consumption must be cut. Second, even with the limited foreign exchange, will crude be available. The supply from Iraq and Kuwait is now likely to be cut off and that from Saudi Arabia and UAE uncertain. The government states that it is exploring alternative sources, namely USSR, Malaysia and Indonesia which may not come off. This reinforces the need to reduce crude and petroleum products consumption drastically, making the conservation proposed in the last issue of the Bulletin and earlier issues a compulsory matter.

### Agricultural Production

As stated in the last issue of the Bulletin, the south west monsoon is very good and well distributed with 28 out of 35 meteorological subdivisions receiving normal or excess rainfall. A special feature of the rainfall is that some of the usually deficient areas like Rajasthan and **S.E. Maharastra** would receive good rains this time. The government therefore states that this year kharif output will be higher than the high yield of last year's kharif. Last year (1989-90) the food grain output is estimated at 172.7 million tonnes, cotton 115 lakh bales, sugarcane 200 million tonnes with oil seeds declining to 171 lakh tonnes from the 179 lakh tonnes in 1988-89. The government also states that the integrated water shed approach has been adopted as the national strategy for dryland farming. It will not only help augment production of coarse cereals, pulses, oil seeds and cotton but also achieve important national objectives of ecological balance, generation of productive employment and reduction of income disparities. For the development of rainfed areas, the farming system is to be adopted which includes animal husbandry, horticulture, agro forestry and fisheries. This approach will serve the needs of the farmers and landless labourers by increasing their cash incomes and ensure people's participation which the 1480 million hectares on dry land demand. A study of the Department of Agriculture and Cooperation of the Comprehensive Crop Insurance Scheme (CCIS) reveals a disturbing picture. Of the increased sum of Rs. 5200 crores, total claims went upto Rs. 618 crores against a premia income of only Rs. 90 crores. Though it is claimed that the scheme was implemented in 19 states and 4 UTs, most of these states withdrew from the scheme by rabi 1986 on grounds that it was not benefiting their farmers. There were several gaps in the share. One was the absence

of a nodal agency to supervise and monitor the scheme. Another was the disbursal of huge loans to the farmers for increased crops at the start of kharif, only to get insurance coverage. This was inspite of large parts of the land not sown and the failure of crops on land already sown. The study also found that the claims experience had been particularly hard in Gujarat, Maharashtra and AP where 54 per cent of all India sums insured, 49 per cent of all India premium and 83 per cent of tolas claims were paid. Low risk area have been left out. Now the government is reviewing the whole scheme and the role of the state and UT governments, credit institutions, GIC and NABARD at the field level to remove the deficits and bring about fuller coordination among them. Above all, it is hoped to be a real insurance for farmers in need.

**Foreign Trade and Balance of Payments**

The provisional exports for the first quarter, April-June, 1990 are estimated at Rs. 7428 crores against Rs. 6039 crores for the first quarter of 1989- which is a growth rate of 23 per cent in Rupee terms and 14 per cent in dollar terms. Imports during the period amounted to Rs. 9305 crores against the previous year's Rs. 7773 crores, which was a growth of 19.7 per cent in Rupee terms and 10.9 per cent in dollar terms. Hence the trade deficit in the first quarter is estimated at Rs. 1877 crores against the previous year's Rs. 1734 crores, which is an increase of 8.3 per cent in Rupee terms and only 0.3 per cent in dollar terms. This is a disturbing picture which raises the question whether the year export target of Rs. 36,000 crores (revised to Rs. 40,000 crores) will be achieved. There is a slackening in exports against the rapid growth rate of the last 4 years which was exaggerated perhaps by the steady devaluation of the rupee and the buoyancy of world trade, millions of which will occur at this level. But there is a new interest in exports by most large companies which the sizeable incentives to exports and trading houses just announced should further push forward. The Balance of Payments (BOP) problem is worrying. The World Bank and other agencies estimate that India's current account deficit has risen from 1 per cent of GDP in the 70s to 6 per cent today. A sharp fall in concessional assistance, rising deficit and increasing resort to commercial loans which are now 35 per cent of our public debt has also the problem of growing interest burden and the loss from the fluctuating Rupee. While earlier the crude import bill increase was estimated at Rs. 1600 crores, there are estimates of its being Rs. 3000 crores. As a sequel to the oil price hike, the sea freight bill may increase by Rs. 700 crores. There are also capital flights unrecorded in our BOP accounts. Between 1976 to 1986 for which records are available they were estimated at $ 28.6 billion and this is likely to accentuate with the volatile Middle East situation. To tackle this situation, if IMF-EFF is ruled out, the BOP crisis in which our foreign exchange reserve is equal to 6-8 weeks imports can be met by a combination of foreign (commercial market) loans and bilateral assistance, on which the government states it is working. On the positive side, there is scope for large exports to be expanded to the unified Europe coming into being in 1992, for increased exports of cotton from this year's 130 lakh bales which is likely to be exceeded

in the coming year which will earn sizable foreign exchange given the firm international market prices for cotton, and for marine products exports which have crossed the 1 lakh tonne mark to 1,10,788 tonnes earning Rs. 634.76 crores. If Handicraft exports are booming, being Rs. 1009 crores (+34.6 per cent) in 1989-90 and also improvement in quality of our exports, this should be some relief on the BOP front.

### Aid and Loans

ICICI is negotiating a $ 100 line of credit from the World Bank. It has also signed an agreement on a loan of $ 100 million from the ANZ group of banks in Australia and New Zealand. Japan has offered a grant of Rs. 100 crores to the Indian Railways to connect the Buddhist shrines in Bihar and other soft loans are in the offing for the railways from Japan.

## International

### South Commission Report

The report of the South Commission presented in August warns that a slow growth rate would condemn the developing countries to increasing poverty and unemployment. The technology gap is a major factor which the south must bridge and the countries should do far more for the present, given the fact that 360 million persons will be added to the labour force in the 1990s. While much of the 325 page report repeats well known truths and well worn obita licta, it does provide a charter for the South to shed its internal desonance and disunity and bound together both for self help and for taking common positions on international forums like GATT where the new rules proposed by the industrial countries on services, investments and intellectual property rights will give the TNCs a stranglehold on the economies of the south — as the commission warns.

### UNEP

Further to the report in the last issue of the Bulletin, the UNEP conference at Nairobi adopted almost unanimously a resolution that the developing countries be given new and additional financial and other assistance so that they can adopt pollution free technologies. The Brazil conference on global warning scheduled for 1992 should now build on this important recommendation which develop the amended Montreal protocol at London. The threat of the green house effect and the one and half metre rise in the sea level is now well recognised and should be dealt with. There is a difference between the US position which wants the same amount of money to be diverted to pollution control and the developing countries' position which want additional resources for this purpose.

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## II. Agricultural Development in Tamil Nadu

### Paddy and other crops

The farmers do not face at this time a bright farming prospect, with the deficient rainfall in most districts from the south west monsoon and the low storage in most reservoirs, as earlier refered to. The farmers are unable to grow paddy or paddy seedlings as they face shortage of rainfall which ranges from 9 to 100 per cent. On top of this shortage in the reservoirs which

is only a quarter of its average capacity of 190 tmcft makes it risky for them to grow crops as tank or reservoirs fed crops. Further, with the postponement of the opening of Mettur which starves the irrigation in the old delta system in Tiruchi and Thanjavur districts, it looks as if the farmers will with their filter point transplant the seedlings they have grown over an area of 3 lakh hectares against the normal samba paddy hectarage of 1532 lakh hectares. The present storage in Mettur is 28 tmcft against last year's 64.9 tmft on this day and the full storage of 94 tmcft. Farmers in both Tiruchi and Thanjavur districts are anxious about the present storage position and are urging government to open Mettur by August 22 as promised by the government with water release from the Grand Anicut as from August 26 so that they can raise samba nurseries which can be transplanted before the North East monsoon in October. Farmers in the area of the Periyar — Vaigai system which has been opened are at work in this double crop area over 45,000 acres. Due to poor storage in the reservoirs the farmers were receiving canal waters to cover only 3.5 lakh acres against the normal 23 lakh acres and even this is so uncertain, that the authorities are introducing the turn system to sustain standing crops. Because of the better opening of Mettur, farmers are advised to grow long term, CR 1000 paddy to be succeeded later by CO 43 medium variety. The farmers want Mettur to release 15000 cusecs for 15 days, so that the water can reach the tail end areas and irrigate nurseries in 6 lakh acres. They realise that this would exhaust practically the Mettur storage but this risk they feel should be taken because anything less will be waste of the water as it would not enter the canals. They want the loan waiver to be completed quickly so that they can apply for and get the Kumbakonam and Thanjavur central banks Rs. 15 crores crop loans. As for sornawari or kuruvai, the farmers are able to cover this year only about 1.61 lakh hectares against the normal 4 lakh hectares, mainly because of the normal coverage of sornavarai in Chengai Anna and North Arcot districts. Now everything depends on the rains in the remaining weeks of the south west monsoon and the north east monsoon supplemented by whatever the farmer can get from Mettur.

**Research results**

In August research results were reported from TNAU on the three steps to be taken to control the discoluration of rice, from the agricultural research station, Bhavanisagar on the results of their studies on the species of birds which act as a means of combating paddy pests, from ISR, Lucknow on pulses inter-cropping with sugar cane, from APAU, Tirupathi on the practices to be followed to keep the pests which attack mango under control, from the regional research station Vridachalam its development of a variety of groundnut and providing it with proper temperature and the control of leaf spots and rust in order to increase its oil content, from the Pudukottai experiment in raising mixed plantations of neem and teak and other tree species as a means of getting Rs. 10,000 - Rs. 15,000 as income, from the district veterinary centre, Kollam on treatment of the serious cattle disease, Boving Ketosis in high yielding cows, from the Vridachalam research station of TNAU on the control measure against foliar diseases of groundnut and similarly from UAS Dharwad on

the countering of the predator of groundnut leaf minor, from the national pulses research centre Vemban on use of water spraying and insecticides control damage by leaf thrips, from the Vridachalam research station on the means of controlling the pod sullening pest in sesamme, from UAS Bangalore on the high yielding Virginia tobacco variety it has developed and from TNAU on the different varieties that it has developed which is a commercial success.

## Dairy Farming

The technology mission on dairy development has indentified Coimbatore district as the Operation Flood focus in Tamil Nadu, has approved an annual action plan for 1990-91 aimed at increasing milk output and strengthening its infrastructural facilities for dairy development. The year's plan involves an outlay of Rs. 1.35 crores for developing new dairy cooperatives, revival of dejunct ones, starting mobile veterinary units backed up by a veterinary hospital to be opened during the VIII Plan and organising mass contact programmes in remote villages to popularise dairy farming. The action plan for the year sets a milk production target of 1.2 lakh litres per day in the district, proposes setting up 53 new dairy co-operatives, reviving 10 dejunct ones, and starting 3 mobile veterinary units and 4 emergency veterinary routes to provide health cover to milch animals which will benefit members of 350 milk societies. Subsidy for growing fodder over 1600 hectares, subsidy under calf rearing scheme to cover 700 calves are provided. Under IRDP 1100 milch animals are to be provided plus 950 animals under the Adi Dravidar programmes. Also preventive vaccination against foot and mouth disease, rinderpest and black quarter and haemmorage are being provided. This dovetailing of dairy farming with the state government's animal husbandry programme and the anti-poverty IRDP programme is one of its strong points. The National Dairy Development Board has in its turn agreed to release Rs. 150 crores to Tamil Nadu for more dairy development and oil seeds project. It has proposed setting up 2 more projects in the state — a Rs. 20 crore modern dairy and a Rs. 50 crore project for marketing fruits and vegetables. It has also agreed to assist a third milk dairy with a capacity of 3 lakh litres a day. These are important and decisive developments with dairy farming area in the state.

## Tea

Tea production is proceeding well in both the North and South and for the year 720 million kgs are expected, against a consumption of 510 million kg and export of 210 million kgs. In the Nilgiris a quite unnecessary controversy about the alleged ecological disturbance caused by tea plantation has broken out. This is a barren controversy as planters are responsible for the greening the soil and use ecological sound techniques. The lab to land programme of the Krishi Vigyan Kendra run by UPASI has helped tribal families and the small and marginal planters to increase tea production by 10 per cent in green leaf tea and 30 per cent in matured tea.

## Rubber

As referred to in the last issue of the Bulletin the differences between rubber growers and users have sharpened in August when the lean season

will end in a month. The users say that the gap between availability and their demand is 45.000 tonnes, the Rubber Board estimate it at 40,000 tonnes and growers at 15,000 tonnes. Not only is there this variation with estimate of the gap, the growers are being advised to hold back their production to push rubber prices up: the users are being asked to stop buying rubber to bring about a fall in prices. In the midst of this varied estimate and reaction, it is difficult to know what the precise position on availability and demand. Should there be more import as rubber users demand or less as rubber growers want. What needs attention is the fall in the prices of rubber by Rs. 3000 a tonne to Rs. 19000 a tonne. This not only hurts the grower but might reduce future supplies. So prices need to be at a level to increase rubber production by growers and at a level which meet the users demand, even if it involves some imports.

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## III. Industrial Development in Tamil Nadu

### Industrialisation of the state

The government states that the various concessions and incentives to industrialists in the state and other states to invest in Tamil Nadu to accelerate its industrialisation is beginning to bear fruit. This accelerated industrialisation goes along with steps to involve workers in the process of industrialisation. In the Eighth Plan, the main thrust of the government is to use SIPCOT and TIIC to create the infrastructure for the rapid industrialisation of the state. The government will use those official agencies to encourage, promote and in some cases sponsor industrial development without itself operating them.

### Salem

The Ministry of Steel reports that it has finally cleared the proposal for the Salem plant to manufacture hot rolling coils (see Vol. XX. P. 278). It has revised its earlier cost estimate of Rs. 310 crores for the expansion to Rs. 446 crores. It works out the return on the investment at 24 per cent which makes the Salem plant profitable and benefits SAIL. The ministry is sending the proposal for formal clearance to the Public investment Board, from where it will go to the Cabinet for approval to be included in the 1991-92 budget.

### ONGC

As ONGC has struck a substantial quantity of oil and associated gas from the offshore PY-32 well from which is flowing 4000 barrels and 1 lakh cubic metres of gas a day, the Union government is processing the investment decision for the development of the PY-3 oil and gas structure, which is 55 km from Nagapattinam. ONGC has now drilling a 9 onland and one offshore location in the Cauvery basin. The Public Investment Board has cleared the crude oil distillation plant to be set up by MRL at Panangudi, 10 km from Nagapattinam. Clearances from the Tamil

Nadu pollution Control Board and union department of environment has been obtained. The plant will use the crude oil from the wells at Narimanam, Nannilam, Kovilkalappal, Adiyakkamangalam etc. in Thanjavur district and distil them into kerosene, petrol and high speed diesel. The plant will have a capacity to process 0.5 million tonnes of crude a year and also produce 16,500 tonnes of LPG. The state government has once more appealed to the union to divert to the south the surplus gas being flared at Bombay High to meet the power needs of the state and the south.

## MEPZ, TAC and Caustic Soda plant

Crompton Greaves is establishing a Rs. 30 crore unit at the Madras Export Processing zone to manufacture electric micro motors for export. The firms electric machinery has a wide domestic market and with this unit it will be reaching out to auction markets. Another firm Nova Electro is also setting up a unit at MEPZ for the manufacture of video tapes. With 43 functioning units, MEPZ is moving into the first place among EPZs. It has 33 other proposals in various stages of processing. With the agreement of the government, TIDCO is disinvesting its 46 per cent share holding in Tuticorin Alkali chemicals and Fertilisers Ltd. (TAC). TAC has an accumulated loss of Rs. 12 crores which is identical with its equity capital of Rs. 12.94 crores. It is said that the state (through TIDCO) is pulling out of this joint sector project along with SPIC who will now have to take over the entire project, which it is reluctant to do. The state government announces that the setting of the Rs. 65 crore caustic soda plant at Vedaranyam using as raw material the salt bed, the plant sponsored by TIDCO and TPL will have a capacity to produce 100 tonnes of caustic soda per day.

## Sponge iron plant and Aromatic Plant

Using the long neglected amendment iron ore deposits at Tiruvannamalai, it is proposed to set up a sponge iron plant at Cuddalore, with a capacity of 1.2 lakh tonnes a year, using Neyveli Lignite as fuel. There is a growing pig iron shortage in the state and the state where there are an increasing number of electric arc furnace which are short of raw material sponge iron. For the first 3 years, till the Tiruvannamalai mines are ready and operative, the plant will use Kudremukh ore and after that using the Tiruvannamalai ores, it will meet the demand for sponge iron in the region which at present is 6.3 million tonnes against the availability of 2.75 million tonnes. When the plant is in operation it will meet the sponge iron needs of all the 26 electric arc furnaces (EAF), of which 11 are in Karnataka, 7 in AP, 6 in Tamil Nadu and 2 in Kerala, which are now forced to work only to 50 per cent capacity because of lack of raw material. The union ministry reports that it has planned to include the Aromatic plant at Manali in its Eighth Plan. It reports that this joint MRL-SPIC project (see Vol. XX P. 328) has obtained the first stage clearance from the Public Investment Board on the basis of which Rs. 18 crores have been sanctioned for pre project activities. The Rs. 1356 crores project, with a debt equity ratio of 3.1 will have Rs. 176.26 crores from the promoters, Rs. 33.9 crores from the foreign collaboration who have been identified and public equity participation of Rs. 128.82 crores. It will also mobilise debenture for Rs. 261.18 crores.

Rs. 362.72 crores from financial institutions and Rs. 159.05 crores from commercial borrowings.

**EOU Unit**

A group of industrialists are setting up an export oriented unit (EOU) for the manufacture of 1.38 lakh sq metres of granite tiles in Tamil Nadu. It will produce 3.6 lakh sq metres of marble tiles in Rajasthan. Among the sponsoring industrialists is the owner life tube wells which is not doing well now because of 3 successive years of good monsoon. This may be one reason for its diversification into granite tiles.

**BIFR—TN Sick Units and Product-Process Development at Coimbatore**

BIFR has formulated schemes for the amalgamation and rehabilitation of 2 closed industries in the state — the Coimbatore Pioneer Machinery with Laxmi Automatic loom Works and for the revival of Vishnu Engineering Industries. Bhavani Sugars and Chemicals has been given 2 months to submit proposals for take over of Gangappa Paper Mills and so too Continental Castings 2 months to submit plan for take over of southern Castings, closed for over 6 years. BIFR has made clear that it does not consider the take over of sick textile mills by the state government a solution and on this basis the union government has rejected the state government's proposal for take over of 3 textile mills as referred to in the previous issues. The union government states that it has cleared the proposal for the setting up of a Product and Process Development Centre at Coimbatore and for this sanctioned a grant of Rs. 6.5 crores. In the initial stages, the centre will assist the pump and electrical motor industry unit to upgrade their technology and help foundries to modernise. It will also help the pump industry to diversify into manufacture of special purpose pumps suitable for different industries. The Coimbatore Centre is a branch of the Central Product and Process Development Centre at Agra.

**Private Sector reports**

Kothari Industrial Corporation reports on its Rs. 13.86 crores modernisation programme involving its textile plants and fertiliser units. In its plantation division, higher productivity through intensive cultivation is aimed at. It has a letter of intent for an EOU at Manali to produce granite slabs. South Indian Viscose reports that its Rs. 100 crores expansion and diversification programme involving setting up a Rs.42 crore viscose staple fibre plant with a production capacity of 50 tpd along side its existing unit at Coimbatore, the expansion of its sulphuric acid plant and in the diversification area the setting up of a Rs. 5 crore plant to manufacture ligno sulfonates from waste wood pulp. English Electricals reports a sales turnover of Rs. 109.87 crores for the year ending March 31, 1990, a transfer of Rs. 66.59 lakhs to its reserve and a profit before tax of Rs. 10.05 crores.

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## IV. Education, Science and Health

**Educational reforms**

The Acharya Ramamurthy Committee is at work, visiting states and taking evidence on the functioning of the education system. It has over 3 months to complete its review and make its recommendations. Apart from the

general agreement to close down the Navodaya Vidyalaya, there is an unfortunate trend of opinion developing against the much needed Non Formal Centres — which with their appropriate timings and flexible curriculum are providing education to children and youths which are not able to attend the full time formal schools. So far UP has made NFE centres function like the formal schools, defeating their purposes. MP, WB and Orissa are also falling in that programme. The state government has recommended to the Board of Secondary and Higher Secondary Examinations to revert to the old pattern of providing "choice of questions" in the model question papers for Mathematics and Botany for the 10th and 12th standards. It is applying the same to the English language paper. This is a retrograde step and is against the generally agreed examination reform now operating wherever it has been applied. The syllabi for the 10th and 12th standard have been upgraded from this academic year to bring the standards of the State Board on par with CBSE. Under the leadership of UGC, a group of experienced educationists including Vice Chancellors are considering how university and higher education institutions — students and staff can contribute to the National programme of eradication of adult illiteracy. UGC has also expressed itself against the appointment and dismissal of Vice Chancellors by Governors of states acting as Chancellors. This is its reaction to the ordinance of a state government empowering the governor to dispense with the services of Vice Chancellors without seeking any explanations for allegations made against them. Madras University in its Atomic Energy Commission report that a master plan has been prepared for a Rs. 16 crore nuclear science centre to be established at Taramani. Similarly Madurai Kamaraj University reports that its Rs. 3 crore National Centre for Bio technology has been launched.

**Science**

The National Centre for Medium Range Weather Forecasting, New Delhi reports that it is developing complex models for medium range weather forecasting for predicting weather development for periods ranging from 3 to 10 days. It has already developed models and used them for short and long range forecasting and regular forecast of weather conditions for the next 48 to 72 hours and for a season.

**Health**

India's Population Project V assisted by the World Bank now in operation in Madras is being extended to 1986 covering Madras city, 4 municipalities of Alandur, Pallavaram, Tambaram and Tiruvotthiyur and the 4 townships of Madhavaram, Ambattur, Avadi and Kathivakkam. It is improving the mother and child care services in these areas giving health servies to mothers during and after child birth and for the children providing immunisation against the 7 killer diseases. One result would be to bring down the birth rate from the present 24.3 per 1000 person to 21, to increase couple protection rate from 52.5 per cent to over 60 per cent, to raise institute and deliveries to 98 per cent and encouraging domiciliary deliveries in the suburbs. The population covered by the project now is 52 lakhs — 42 lakhs in Madras city and 10 lakhs in the suburbs and is to be raised to 66 lakhs. Remote sensing is to be used to identify mosquito

areas in Madras and Delhi but be later extended to Karnataka, UP, Gujarat, Rajasthan and Goa. A voluntary agency, the Student Action Groups for Mosquito Control has been started in Madras which is concentrating on the five heavily mosquito infested circles of the city — not only fighting mosquitoes but improving the environment and sanitary situation which needs them. The five city circles where the 100 students will work are George Town, Royapuram, Vyasarpadi, Chintadripet and Triplicane.

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## V. Employment and Labour Relations

The Bill which includes provisions for workers participation in management to be introduced in the current (monsoon session) of Parliament as referred to in the previous issue raises a number of issues both among managers and workers. The provisions which are attracting attention are :

— 12 per cent representation for workers on the board, with full voting power and 13 per cent at the shop floor level

— a secret ballot to elect workers, board level representatives

— inspectors will have power to call for books, registers and any other employment records

— any person contravening the bills provision will be punishable with either imprisonment for upto 2 years or fine of Rs. 2000 or both. It is essential that these and other provisions must be discussed with both management associations and workers unions before being passed by parliament, because without their full cooperation, the law cannot operate effectively.

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## VI. Other Items

### AIR and UGC

AIR as a further follow up of the International Literacy Year programme ran a series of talks on the pioneers of the Adult Literacy education programme in the state. There was an interesting and lively audience reaction to the series. As noted earlier UGC brought together a group of people who considered and debated a specific proposal for one academic year of the colleges and universities to be spent whole time in villages and urban slums to make the adult illiterate literate. There was a suppressing degree of agreement with the proposal from quite a wide variety of persons. This would also be a mark of the International Literacy Year.

### World Jury and UNESCO Literacy Awards

There was a meeting of the World Jury towards the end of August when

candidates working for literacy in outstanding ways from 27 countries — submitted by governments and non governmental organisation — were examined. Bearing in mind that this is the International Literacy Year, the Jury included this fact in its criteria and selected 5 candidates for the award of the prizes endowed by the USSR, US, Japan, Iraq and Korea and also 12 who were awarded honourable mention. The awards will be made on the International Literacy Day — September 8, 1990.

## CDS

The Governing Body of the Centre for Development Studies (CDS) Trivandrum met in mid August in its annual meeting. It accepted with regret the resignation for health reason of Dr. Lakdawalla from the Governing Body and paid him a tribute for his work for the Centre. The programme of the Centre for 1989-90 was reviewed and the high quality of the ongoing research was reviewed and commended. The focus of the future research is to be around the second Kerala study, on which a substantive paper will be presented at second decade celebration of the Centre in 1991. The Centre approved the revised budget for 1990 and the budget for 1991. It approved the audited accounts for 1989. It went into the appeals made by the 3 officers against the punishment given to them by the Committee of Direction and confirmed them. It gave guidance to the Committee of Direction on the rules that are being drawn up for the Centre.

## IIC and SPC

There was the monthly meeting to the panel of the Economic Affairs group of the India International Centre (IIC) on sugar and agro industries. The demand of the sugar industry for complete decontrol was the subject of wide ranging discussion. In the case of Agro industries the large possibilities for their expansion and export of their products were stressed. As noted earlier the two meeting of the State Planning Commission (SPC) in August had before it the Union Planning Commission's time table for preparation of the VIII Plan and its request for a liaison officer, the interim report of the Economic Advisory Council on employment and the Government Orders on block planning and the subject to be covered by the blocks : these papers were used in the 2 meetings.

## IASSI and ICRIER

The Editorial Board of the Indian Association of Social Science Institutions met on Saturday 18 August, 1990 in IIC, New Delhi. It reviewed the present publications programme of the Association and expressed satisfaction and felicitations to the member secretary on the quality of the quarterly journal. It also advised on the contents of future issues and the publications emerging from the Association's conference and seminars. The Governing Board of the Indian Council for Research on International Economic Relations also met in New Delhi in August and reviewed and approved the budget for 1990-91. I expressed anxiety at the spirally cost of the headquarters building, appealed to the government and donors to contribute further to meet these costs. It reviewed the research programme of the centre and gave some directives for its further refinement and development.

## September Development Seminar

The paper for the September Seminar, 'Gaps in Science and Technology in Tamil Nadu' by Dr. Ananda Krishnan, together with a summary of the discussion of the paper at the seminar appears as the *first* article.

## Second article

A note on Super 301 and the Uruguay round of trade negotiations appears as the second article.

## Book Review

A review of Manjit Singh's book — The political Economy of unorganised Industry, by Nirmal Sengupta appears in the book review section.

# M I D S News

Mr. S. Guhan participated in a seminar on 'Convergence of Social Services' organised by the Indian Institute of Public Administration, New Delhi on 14th September, 1990.

He also gave a talk on the 'Report of the Mandal Commission' at the India International Centre on 15th September.

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Prof. C. T. Kurien participated in the Annual get-together of the Institution of Engineers (India), Tamil Nadu State Centre on 15th September and gave a talk on "Economic Aspects of Choice of Technology".

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Dr. Padmini Swaminathan attended a Seminar on "Successful Strategies for Small and Medium Industry" at Bangalore on 26th and 27th September sponsored jointly by the Entrepreneurship Development Institute of India, Ahmedabad and the Confederation of Engineering Industry, Southern Region and spoke on "Industrial Growth in Tamil Nadu—A Personal Assessment".

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Prof. S. Neelakantan presented a paper on "Reflections on Mandal Commission Report" at the Thirunalaipovar Sociology Seminar organised by the Bharathidasan University at AVC College, Myladudurai on 8th October.

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Dr S. Janakarajan presented a paper in a seminar on "Hydrological Problems Relating to Tanks", organised by the Centre for Water Resources, Anna University and Institute for Water Studies, PWD., Government of Tamil Nadu, at Madras during 4th and 5th October.

He also presented a paper in a seminar on "Traditional Rain Water Harvesting Systems of India", organised by The Centre for Science and Environment, at New Delhi, during 9th and 11th Octnber.

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Prof. K. N. Panikkar, Chairperson, Centre for Historical Studies, Jawaharlal Nehru University gave two lectures in the Institute. The first lecture, "Peasant Revolt in Malabar" was on 8th October. Prof. S. Gopal presided over the meeting. The second lecture "Intellectual and Cultural History of Colonial India" was on 9th October. Prof. C. T. Kurien presided over the meeting.

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*September Development Seminar*

# Perceptions of Gaps in Science and Technology in Tamil Nadu

by

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## Abstract

Science and Technology are as important in economic and social development as other major factors such as capital, land and labour. The unprecedented pace of development of new technologies in the eighties have affected in fundamental ways a whole range of activities in agriculture, manufacturing and services. In this context the status of Science and Technology in Tamil Nadu in key domains of socio-economic interest is reviewed. The present wave of technological change offers the means towards the increasing competitive advantages in Tamil Nadu. The nature of institutional innovations for effective redirection of current efforts in Science and Technology is outlined.

## 1. Introduction

Science and Technology have become major instruments in the generation and distribution of Wealth. They are as important in economic and social development as other major factors such as capital, land and labour. The direction of progress in scientific and technological capabilities should be related to the changing social and economic structures and demands.

Therefore perceptions of gaps in Science and Technology in Tamil Nadu can be analysed in many different ways depending on the development objectives of the State. Even the value laden definition of the term "development" will continue to be debated, a reason-

able basis to characterise these domains, which are inferenced explicitly by science and technology can be proposed on the basis of the past three decades of diverse experiences and view points. These are essentially related to satisfaction of the *Basic Needs* of the people, the requirements of the *Industries And Services*, and the imperatives of *Environmental and Ecological Changes*.

## 2. Science and Technology Capacity of the State

Any attempt to assess the science and technology capacity of the state of Tamil Nadu should include not only the evolving social, economic and environmental demands but also the opportunities (and constraints) of the emergence of new technologies. Such an exercise raises more questions than answers.

As stated often, the existence of ample stock of scientists, technologists and S & T Institutions does not necessarily constitute viable foundation for development unless functions of this stock is pervasive in the life and work of vast majority of the people. The science and technology man power potential in Tamil Nadu is evident from fig 1.

At a microlevel, practitioners of different disciplines of sciences and branches of engineering are often concerned with problems internal to their own disciplines. These primarily relate to organisation and re-organisation of departments and research activities for their own scientific and technical merits or for prestige value and peer recognition. Socio-economic compulsions tend to assume secondary importance. With increasing pressures and incentives there are hopeful signs of reversal of this trend.

Since the state has certain expectations of returns from its (and the national) investments in science and technology, the nature of science and technology activities should correspond to the determined socio-economic priorities. However consensus among different socio-economic constituencies on the areas of priority action is difficult to achieve, just as the decisions to prioritize science and technology activities is not easy. A dynamic process of policy dialogues will be helpful in making deliberate choices among problem areas and sectors with in different development domains. Relative determination has to be made between the support for fundamental research, development work and proportion of innovation and commercialisation.

### 2.1 New Technologies

The role of new technologies in the development of the state is to be explored. The decade of eighties was characterised by an unprecedented pace of development of new technologies and rapid changes in their adaptation and use. Some of these technologies have penetrated markets of virtually every country, rich or poor.

However, the consequences of the wave of technological changes will affect different sectors differently and therefore assessments of the beneficial and harmful effects of the emerging technological changes and different socio-economic entities is necessary. Moreover there are technologies with such high level R & D interest that the core aspect of their development will be centered in a handful of countries and the State could at best participate in their adaptation. The communication

technologies, space technologies and material technologies fall in these category.

On the other hand there are emerging technologies with affordable R & D intensity in which the State can participate in all aspects of the developments and use. Bio-technologies and energy technologies can be cited in this category.

The prospects of Tamil Nadu for effective participation in the world wide technological changes (and in benefiting from them) will depend on the progress in building its science and technology capability.

### 3. Science, Technology and Basic Needs

Over the years there has been increasing emphasis on planned efforts to deal with formidable problems of satisfying basic needs of food securities, education, health, housing and their inherent components such as water supply and transportation.

### 3.1 Food Security

The prospect for economic growth and social stability will depend upon the ability of the state to provide food security to the population, majority of whom are underfed and undernourished. The total food grains production which was 5.651 million tonnes, in 1980-81, declined to 4.923 million tonnes in 1982-83, picked up through 83-84 to 86-87 and the estimate for 1987-88 was placed at 7.652 million tonnes. (fig.2)

A study of the trend in growth of NSDP of Tamil Nadu shows that the percentage of growth in 1982-83 (keeping the base year 1980-81) was 2.8 and it fluctuated between 3.7 (1983-84) and 5.7 (1986-87) and reached 5.6 in 1987-88. The per capita income which was Rs. 1,498 in 1980-81 went up to Rs. 1,943 (quick estimates) in 1987-88 a rise of 30 per cent, the average growth rate between 1980-81 and 1987-88 being 3.94 per cent.

The pace of agriculture growth had picked up only from 1983-84 showing greater stability than in the earlier years. The total area of 21.12 lakh hectares brought under Paddy in 1987-88 was higher by 1.57 lakh hectares compared with the area in 1986-87 but a fall compared with 23.42 lakh hectares in 1985-86 while on an average paddy was cultivated in 23.42 lakh hectares between 1980-81 and 1984-85. The coverage during the three years, 1985-86 to 1987 88, averaged 20.77 lakh hectares. Only in 1981-82 and 1984-85 the area under paddy was as high as 25 lakh hectares. The yield in terms of rice was record 2786 kg per hectare in 1987-88, a steep rise from 1845 kg/ha in 1982-83. The average yield of rice in Tamil Nadu compares well with Andhra Pradesh (2075 kg/ha), Haryana (2559 kg/ha), and Punjab (3164 kg/ha).

In view of limitations in finding additional land for food production, the state would have to resort to intensification of the productivity of available lands. The science and technology capacity is available to a large extent to meet this demand, including capacity to expeditiously exploit new developments in biotechnology. The challenge, however lies in making these technologies available to small and marginal farmers. The limiting factors, however, would be the necessary infrastructural supports such as water, electricity and transport. Hence the problem of food security

needs to be viewed more from Science and Technology capacities in these disciplines than those confined to agricultural sciences alone.

### 3.2 Education

While vigorous efforts to increase the educational facilities have been undertaken in the state, there are continuing debates on the relative distribution of resources among primary, secondary, post-secondary levels as also between various vocational and professional levels and categories. A variety of issues relating to Science and Technology arise in these deliberations.

Some of the issues relate to quality and content of Science and Technology at these levels, while others concerned with Science and Technology as a means of more effective delivery and communication is development of education and skills. There is a large gap in the state between the potentials and actions in both aspects of educational scene. Additional issues which have significance to Science and Technology efforts are the rural versus urban educational facilities, development of educational facilities for growing female entrants, persistence of high level of illiteracy and unemployment of educated persons.

### 3.3 Health

The status of health of people of Tamil Nadu is relatively poorer than most of other states of the country. The deficiencies in health sectors are endemic to whole range of functions. These include health education and training, health facilities, differential access to health care among different socio-economic groups and so on.

The present function of Science and Technology relevant to health care at present are only marginally adequate in in relation to the size of the problem. The Science and Technology gaps are evident not only in absence of affordable and accessible facilities and drugs but also in the neglect of systematic evaluations of the maladies affecting different economic, occupational and demographic groups.

### 3.4 Housing

There has been an extensive body of research on the demand aspects of housing as well as on whole range of construction activities. There is adequate Science and Technology capacity to deal with the basic needs, which will remain ineffective in the face of other sociological and economic constraints.

## 4. Science and Technologies in Industries and Services

During the last two decades, there has been a general increase in investments towards the industrialisation in Tamil Nadu along with many changes in the output mix between the different sectors of traditional and modern industries and between the large and medium and small scale industries. There has been a substantial growth in the organisational support systems, which are either governmental, autonomous or private. A vigorous financial support system has also grown rapidly. In export performance Tamil Nadu based industries have fared well especially in recent years (fig. 3).

Despite these organisational innovations, the pattern of growth of industries

in the state has been rather uneven. In particular an analysis of the state of industrial production shows that cement, power transformers, electric motors, rail wagons, cotton, yarn, tyres and dry cells suffered negative growth. Despite the general malice that has affected the textile industry as a whole, the number of spinning mills, installed spinning capacity and production of yarn (cotton, blended and man-made fibres—)and cloth have shown moderate increases. Cotton cloth production rose to 135 million meters in 1987 from 106 million meters in 1985. However in composite mills installed spinning capacity has declined from 11.71 lakh spindles to 11.24 lakh spindles.

Cement production in eight factories with an installed capacity of 43.32 lakh tonnes turned out 37 lakh tonnes in the year 1987 and 1988, the capacity utilisation being 88 to 89 per cent.

In the power sector matching the demand, the supply has become a big problem, and as a result many industries have been starved of electricity inevitably affecting production. The installed generation capacity from 1983-84 had been static for two years. (1983-84 and 1984-85) at around 3300 MW, but improved to 4558 MW in 1987-88. The gross availability of energy also fluctuated from year to year. Though the availability of 16318 million units in 1986-87 was an improvement over 10377 million units in 1983-84, the consumption demand too had grown by leaps and bounds. Percapita consumption has increased from 185 units in 1982-83 to 232 units in 1986-87 against the all-India average figures of 147 units in 1982-83 and 191 units in 1987-88. While the states power generation was 9450 million units in 1986-87 and 9346 million units in 1987-88 the consumption was 11401 million units in 1986-87 and 11972 million units in 1987-88.

### 4.1 *Industrial Science and Technology support system*

The Science and Technology support system for industrial development consists of several vital components. Of these the state has been able to satisfy the manpower demand of most of the conventional industries operating under traditional practices. There has been a slow progress in blending emerging technologies with traditional industrial sector.

The Science and Technology support for the quality control aspects of both traditional as well as modern industries is virtually non-existent. The development and use of sophisticated technologies for competitive growth of industries such as modern information and communication system and design and tooling facilities etc., are woefully inadequate.

While the large scale industries continue to depend on imported techniques and know-how, very little Science and Technology support is available for small and medium scale industries.

There is a growing recognition of the need to initiate the process of institutional changes to forge effective links between Science and Technology system and the industrialisation efforts especially towards the increasing competitive advantage.

## 5. Science and Technology in Environmental and Ecological Domains

The decade of the eighties has brought the threats of environmental, ecological

degradation around the world and some of it is beginning to be addressed in Tamil Nadu. These problems are related to land use patterns such as urban development, deforestation etc. domestic and industrial pollutions of water, soil and air, long-term changes in the ecology and environment such as loss of bio-diversity, climatic changes etc. and interrelated problems between these categories.

There is an adequate S & T capacity, to address most of these problems. Yet deployment of this capacity to undertake effective analysis and implement the solutions is yet to come in a meaningful way.

## 6. Conclusion

The existing Science and Technology capacity in Tamil Nadu is substantially high relative to the demands but utilisation of this capacity is low, except in agriculture and in some of the conventional industrial sectors. Their use in service sector and in the environmental sector is marginal. The growth of Science and Technology capacity in the emerging technological areas is satisfactory but lacks direction and motivation to develop the innovative support required by modern industrial systems.

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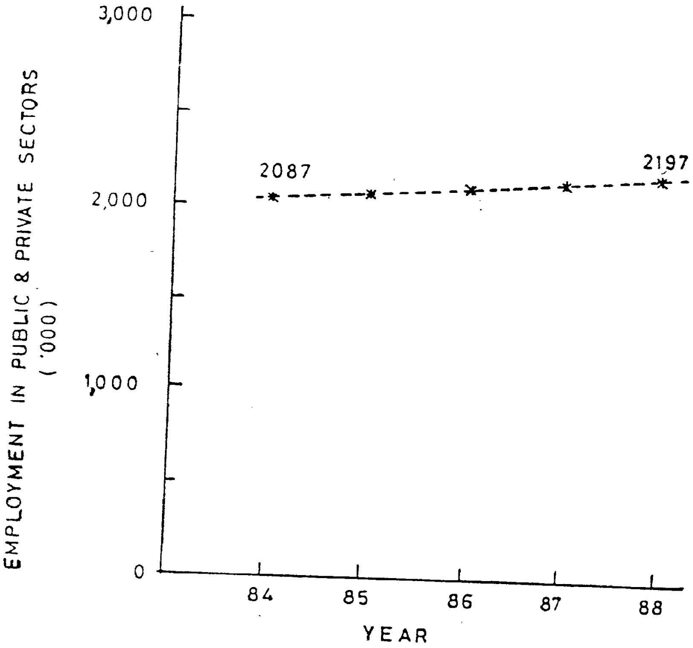



FIG. 1. EMPLOYMENT IN PUBLIC AND PRIVATE SECTORSIN TAMILNADU

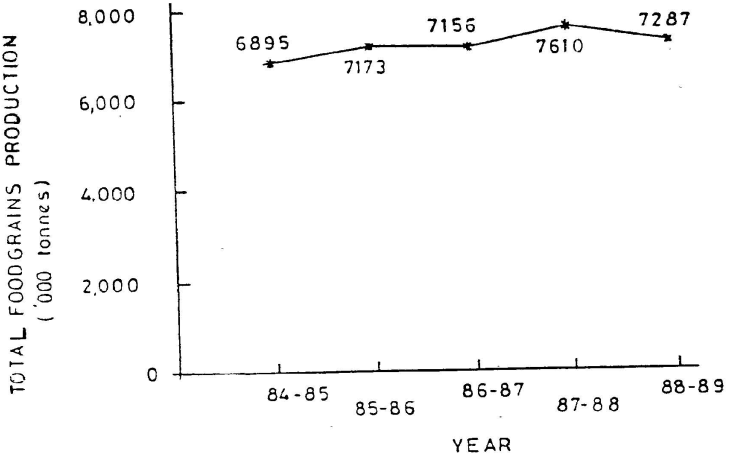



FIG 2. TOTAL FOODGRAINS PRODUCTION

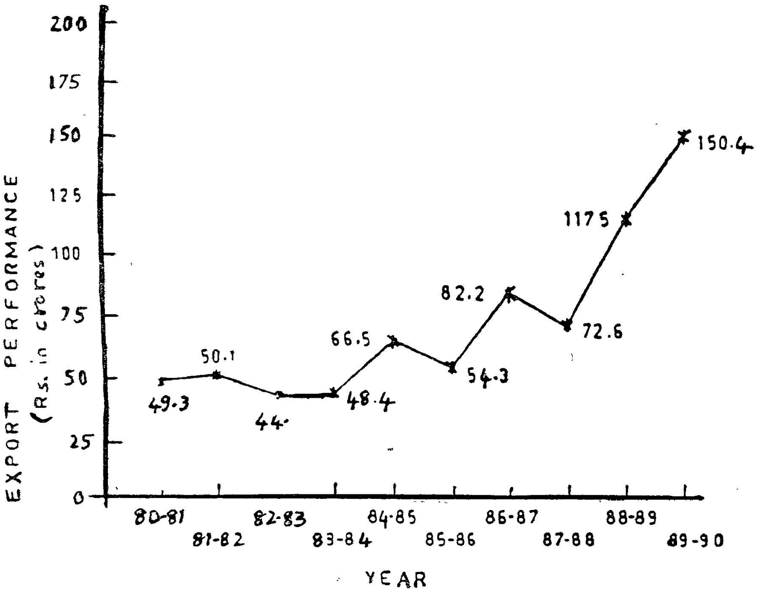
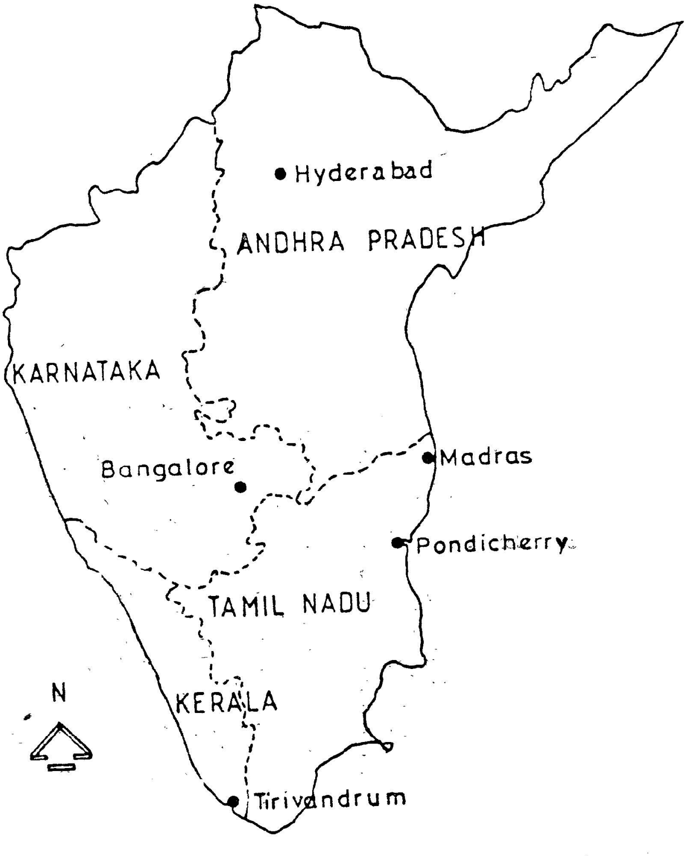



FIG. 3 EXPORT PERFORMANCE




| State | TN | Kerala | Andhra | Karnataka |
|---|---|---|---|---|
| Urban population (in lakhs) | 159.3 | 47.7 | 124.6 | 107.1 |
| Rural population (in lakhs) | 323.6 | 206.3 | 411.3 | 263.3 |
| Total population (in lakhs) | 482.9 | 254.0 | 534.9 | 370.4 |
| Area (in sq. km.,) | 130,058 | 38,863 | 275,068 | 191,791 |
| Density (persons/sq. km.) | 372 | 655 | 195 | 194 |

## Summary of Discussion

Dr. M. Ananda Krishnan presented a paper on 'Perceptions of gaps in Science and Technology in Tamil Nadu'. He highlighted the methodological problems to identify the gaps in Science and Technology (S & T). The growth of S & T is a random process, but the gaps were assumed to be linear in nature. The random gaps were due to pressures at various levels. Though the pressure on S & T is very high in recent years, all over the world, in Tamil Nadu there are very few organisations which does remarkable work. Drawback of S & T in our country is due to dependence on foreign funds by our governments for various projects. Hence it is suggested that for the welfare of our country the government should allot adequate funds.

The author discussed about the pumping energy i.e. when a system fails there should be an external energy (in the form of funds) pumped to generate the growth of systems. In order to make maximum use of the available resources priority ordering would find a logical solution to the existing problems with the aid of S & T. Consequently, the tendency to quantify the gaps spring in. Though quantitative tendency leads to falsification, it helps comparison and claims monetary value. There arose a challenge of knowledge to determine the gap in S & T. Other tools developed to identify the gap are the mathematical indicator, objective/impact indicator and perception indicator is the most significant one. This depends on historical statistics. Perception is usually generated by institution for it is valued by various inputs.

Social and economic changes bring technological changes which causes environment problems for which administrative changes in Science and Technology must be looked upon. Due to problematic financial techniques in Tamil Nadu micro sciences were given priority. These also need huge investment and involves large gestation period.

In terms of perception, it is possible to determine the limiting and categorising factor. Distinction between quantitative and comparative advantage was brought out. Institution innovation is

essential to identify the linkage gaps between units/industries and to interact with available facilities to generate growth. It is enssential to highlight the gap and check if S & T are going in the right direction with limited resources. The author concluded his presentation with highlighting the point that the methodology, instrument and monetary instrument should be concentrated to identify the gaps.

The Chairman, Dr. C. V. Seshadri commented that technology based on priority issues are essential for our state.

It was pointed out by a participant that something was missing from the methodological point of view ; the S & T gaps work under certain issues which are beyond the official and non-official inputs. He was anxious to know about the substantial work of scientists in Tamil Nadu with the stratified gaps that is existing in the society. The author felt that S & T cannot create interphase or interact machinery to determine the priority and potential in Tamil Nadu which could be achieved only by institutions.

Another participant was keen to know if S & T could find a solution ? and if so, how ? The author replied that S & T could find a solution but the solution was in a mess. There should be a harmony between thinking process and scientists. This should be induced to bring about social responsibility.

When a question was raised by a participant as to what is the role of S & T to meet community needs and raise the standard of living, author brought out the fact that there is sufficient capacity in the traditional industry to fulfill the gap. Small, medium and informal sector which contribute a major share in GDP is neglected. There are lot of opportunities in S & T to draw attention in these, which can be quantified.

A participant inquired about the process of resource allocation and scientist role. The author responded that, with the available resources, what best can be done will be the scientist problem. Resource allocation depends on the decision taking authority and the priority given by them. It was viewed that the role of university regarding this is like a priest in church.

Regarding the stock of potential manpower a participant felt that manpower potential can be used through institutional arrangements. He felt public sector has failed in our states. This was due to the educational system and bureaucratic set up. Action relating to potential manpower in agriculture has come to standstill because production is given more emphasis than manpower.

It was opined by a participant that in bigger and five star institutions more money is being invested for equipment and allied things, whereas the institutes in rural areas are either poorly equipped or out dated techniques are installed. He was curious to know if transfer of technology to rural institutes through these bigger institutes was possible. To this the author reacted saying that this is a perennial problem throughout the country and it is a complicated process. Hence it is essential to organise talents with available techniques.

A participant wanted to know that with the development of perception, how do we prioritise the gaps. He added, is pure science students aware of the problem like the social science

students or is pure scientists syllabus only theory based? To this it was generally felt that the pure science syllabus does not cover awareness of social problems. It has to come as a culture of society, ability to observe the environment and interpreting problems should be self generated.

Regarding gaps in expectation a participant raised the issue of people's participation and university reaction. Here the author was of the perception that expectation comes from different sources given the human nature. It is assumed that only around 5 per cent of the society react. The problem here is to identify this 5 percent from the cross section and motivate them.

The seminar was concluded by the Chairman's statement that S & T is very bad in United Kingdom and he pointed out that all the ideas generated in U. K. has been commercialised in Japan and United States. So is the case with India. Indian ideas published in journals are patented by other nations. Even within our country, for sanctioning venture capital, banking authorities accept ideas imported from abroad rather than indigenous ideas.

— Millie Nihila

## 'Super 301' and the Uruguay round of Trade Negotiations*

The United States decision to single out India for 'Super 301' actions in 1990, while removing Japan and Brazil from the list, places the country in a very difficult situation. The United States' action must be seen for what it is. It is not one to protect any legitimate economic interest by cutting down trade and payments deficits. If it was either of these, taking action against India, with whom the United States has an annual adverse trade balance of about $ 200-300 million would not make sense. Both Japan, with whom it has a deficit of 150-200 times this, or Brazil with a 30-40 times larger trade surplus, have been spared.

What cannot be missed, therefore, is that the United States' listing of India, Brazil and Japan under the Super 301 clause was inspired by different reasons, and was meant to achieve different purposes'. Japan and Brazil have negotiated themselves out of the list. They have opened their markets for imports of items in which the United States was interested. The explanation, of course, also lies in Japan's retaliatory capacity. Japanese short-terms funds could be withdrawn from the United States' financial market.

However, the option was never really open to India to liberalise imports of selected items from the United States. In the case of India, the focus is clearly on "trade-related" investment measures (TRIM), "trade-related" intellectual property rights (TRIP), and trade in services. All these are controversial issues under negotiation in the current Uruguay round of the General Agreement on Tariffs and Trade (GATT). What the United States, law demands is the removal of all barriers which tend to stand in the way of access, not only of the US, but of the business interests of the rich countries generally in the Indian market in these areas.

The action of the United States' Trade Representative, Carla Hills, endorsed

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* This note by Dr. Nasir Tyabji contains extracts Prepared for a Convention.

'In the case of Brazil and India, their Capabilities are not only in manufacture, but also of export, "Standerd-Modern" technology clearly plays its role. For an up-to-date discussion, see M. R. Bhagavan Technological Advance in the third world (Popular Prakashan, Bombay, 1990).

by President Bush, is purportedly over India's refusal to discuss or negotiate with the US *bilaterally* on the two issues cited by the US : opening the Indian insurance market to US insurers, and removing or modifying the Indian conditions and requirements regulating foreign direct investment.

It is also clearly intended to pressurise India into adopting a softer line in the Uruguay Round — on the new themes (TRIPS and TRIMS), on changes in GATT balance-of-payments articles, on safeguards and other rule-making areas, on textiles and clothing, agriculture etc.

The US move, under its trade law, is well-calculated and well-timed. It is designed to take forward the process of softening up India and the third world as a whole, which has been under way for quite some time via the 'aid route' by the World Bank and the IMF, and the 'trade route' in the GATT round.

What is not without significance is the initiative taken soon after the Indian government fell in line on TRIP and TRIM, within the frame of the GATT Round in early 1989. Representatives of Indian big business, with close collaboration with foreign business interests, came forward to proclaim themselves in favour of India joining the Paris Convention on Patents (the core of "intellectual property rights"), adjustments in FERA and MRTP, and direct foreign investment on a massive scale.

It will be necessary to keep a watch on those in the government, and in business, who talk glibly about policy adjustments which would result in a quantum jump in foreign direct investment from $ 100 million annually to $ 1,000 million.

### Implications of the 'Uruguay' Round

Industrialised countries led by the United States are the prime force behind the move to include intellectual property rights (IPRs) under the General Agreement on Tariffs and Trade (GATT). Lack of 'adequate' protection, and ineffective enforcement mechanisms are cited as trade distorting These trade distorting effects are indentified as the trade related aspects of IPRs. To remove or reduce these trade distortions, they suggest a GATT-based approach to IPRs.

Through the rule-making processes of the round, both on the old GATT issues, and in the new areas of Services, Intellectual Property Rights, and Investments, they are constructing step by step, under the talk of 'inter-dependence', a new transnational economic system — with 'rights' for their enterprises, duties and obligations for governments in Third World countries, and continued dependency for the peoples of the Third World.

In all areas, the term 'trade', which everyone in the South thought, by definition, could cover only trans-border measures, has been stood on its head. This is to 'discipline' and force changes in national economic development policies, on the specious argument of their indirect trade effects, or 'distortions' in trade flows, that take place in their absence.

Under the GATT Articles, those provisions that provide an element of flexibility to Third World nations, such as balance-of-payment provisions, are being targeted for changes. Even practices which have a sound basis in text-book economic theory, such as state subsidies to correct market imperfections in an economy, are sought to be attacked. The limited GATT prohibitions against export subsidies are being sought to be

expanded to outlaw a wide range of Third World development objectives achieved via domestic policies in forms of economic organisation and production.

But articles of the GATT, where Third World countries would like better discipline-such as on the adverse effects of customs unions, of free trade areas and of other such arrangements on third parties ; or in tariff and other renegotiations where the interests of small countries and their major exports are now totally ignored on the ground that they are only small suppliers in the market and have no negotiated or established rights — have received little attention.

**Technological dependence enshrined**

It is useful to begin with a clarification of the concepts underlying the past discussions on the revision of the intellectual property system. There has been ambiguity in the use of the terms "intellectual property" and "industrial property". Conceived in a narrow framework, intellectual property included mainly copyrights and related rights, and industrial property covered patents, utility models, inventors' certificates, trademarks, and similar rights. In the recent period, copyrights have been extended to include not only literary and artistic works, but also, in several countries, computer programmes, integrated circuits and informatics.

There is no point in subjecting these definitions and concepts to any microscopic examination. Suffice it to say that in the GATT negotiations under the Uruguay Round, the developed countries have insisted upon a comprehensive meaning of the term "intellectual property", so as to include industrial property and counterfeiting.

A patent is a right granted by governments to inventors, for a fixed period, to exclude other persons from imitating, manufacturing, using or selling a patented product, or from utilising a patented matter or process. The accent is "to exclude" other persons from certain acts.

This means that governments, by their laws and regulations, confer a monopolistic right on certain persons. Any grant of a monopoly necessarily affects a wide variety of interests — for instance, the national patent holder, the patent-granting country, the foreign holder and his country, and the international community.

These are the interests which have been at play in the evolution of the patent system. As the diversity of interested parties indicate, there is no philosophical or practical basis on which it can be suggested that all these interests are always invariably identical. In fact, conflict of interests between the monopolistic rights granted to private interests, and the imperative of safeguarding public or national interest is inherent in the patent system. In its history, the patent system has been buffeted by these conflicts. Its evolution has been shaped by these conflicts. The results of achieving a balance between private and public interests have varied over time and from country to country. That is why the industrial property laws of all countries differ from each other.

In order to appreciate the actual operation of the patent system, the current scene may be discussed. During the 1970s, there were about 3.5 million patents in existence. Of these, no more than six per cent (200,000) were granted by developing countries. An overwhelm-

ing majority of these patents-as high as 84 per cent — were owned by foreigners, mainly by the transnational corporations of the five major developed countries in the West. Over 95 per cent of these patents were not at all used in the production process in the developing countries.

The nationals of developing countries held no more than one per cent (30,000 in all) of the 3.5 million patents in the world. The developing countries were thus plainly on the periphery of the world patent system. In comparison, they represent 75 per cent of the world population, 40 per cent of enrolment in higher education, 20 to 25 per cent of world GDP, and 15 to 20 per cent of the world industrial out put, but only 1 per cent of the world patent stock. The patent system thus is the most unequal international relationship. No wonder the Third World countries, upon their independence, wished in earnest to restructure this highly unequal and inequitable relationship.

Guided by these considerations, several developing countries revised, during the 1970s, their national Patent Laws and Systems to serve the needs of their development. They tried to establish a balance between the monopolistic rights of the foreign patent holders, and their obligations towards promoting the development of the Third World.

The Third World countries also engaged themselves in long negotiations to revise the Paris Convention in the World Intellectual Property Organisation (WIPO) and to establish in UNCTAD a Code of Conduct on Technology. The developed countries participated in these negotiations. Much progress was made. But this process was abruptly halted in the early 1980s, about the same time as the global economy slowed down and imposed heavy balance of payments strains on the developing countries.

Then the developed countries, led by the United States, shifted these negotiations from UNCTAD and WIPO to GATT. Their proposals in GATT are completely contrary to the development needs of the Third World. They go back on everything the developed countries themselves, and WIPO, had earlier agreed to in UNCTAD and WIPO. They aim at establishing a uniform patent system which serves only the interests of the developed countries. The proposals reduce the scope of exclusions, expand the duration, and abolish compulsory licensing and licence of right. They do not even refer to any need for controlling abusive practices.

These proposals of the North wholly disregard the fact that the developing countries, and the developed ones, are at completely different stages of development. These differences require that the patent systems of the developing countries should be much more flexible in regard to scope for patentability, the duration of patent grant, control of abusive practices, the system of compulsory licensing and licences of right.

When these multilateral initiatives are going on at both the WIPO and the GATT, the United States is taking certain bilateral measures on the question of IPRs. These will be discussed in the next section.

## 'Super 301' and the United States

In August August 1988, the United States Congress passed the Omnibus Trade and Competitiveness Act, 1988 which substantially amended the Trade Tariff Act of 1974. Section 1301 of

the 1988 Trade Act ('Super 301', which amends Section 301 of the 1974 Trade Act) lays down the responses to unfair trade practices. Under this Act, the authority to decide unfair trade cases is transferred from the president to the office of the US Trade Representative (USTR). Retaliation is made mandatory for 'unjustifiable' trade practices. Examples of 'unjustifiable' practices include any action by a foreign government that denies the right of establishment of protection to US IPRs.

Section 1303 of the 1988 Trade Act '(Special 301', which amends Section 182 of the 1974 Trade Act) deals with the identification of countries that deny adequate and effective protection of IPRs. The act requires USTR to identify countries that do not adequately protect US IPRs or deny fair and equitable market access for US exports that rely on IPR protection. Of these countries the USTR must identify priority countries. Priority countries are those that : (i) have the most onerous or egregious acts, policies, or practices and (ii) whose acts, policies, or practices have the greatest adverse impact (actual or potential) on US products, but (iii) *are not entering into good faith negotiations or making significant progress in bilateral or multilateral negotiations.*

The USTR's 'National Trade Estimate Report-1989' identifies India, Brazil and Taiwan, among other countries, as having ineffective intellectual property protection. The complaints against the Indian patent system concerning norms and standards are as follows. Regarding coverage it says that drugs, food and chemical products are not patentable along with other exclusions from patentability. According to the report, where process patents are available, the duration is only for a short period. Regarding duration, the report says, "product patents expire fourteen years from the date of patent filling". (This is not true because the duration of fourteen years in India starts from the date of patent grant). Regarding compulsory licensing the report says, "stringent compulsory licensing provisions have the potential to render patent protection virtually meaningless".

The USTR's 'accelerated action plan' for India with regard to patents involves improved and adequate patent protection for all classes of inventions, conclusion of an intellectual property annex to the bilateral science and technology agreement, and *constructive participation in multilateral intellectual property negotiations.*

The Indo-US Science and Technology initiative (STI) was signed in 1982, and was renewed in 1985. In April 1987, the US president issued an executive order, to the effect that the US government must take into account whether countries adequately protect IPRs, while negotiating science and technology agreements. After much hesitation, the STI was renewed in October 1988. The joint communique stated that, "India and the United States agree to consider the question of providing for protection and allocation on a mutually agreeable basis of any intellectual property rights arising out of the STI programme". This made the protection of IPRs a bilateral issue. *Patent protection has never been a bilateral issue before. It has wider implications on the patent law, because those technologies arising out of the STI alone obviously cannot be given a different level of protection from the others.*

## The World after the Malta Summit

A major offencive by the rich countries organised in the OECD has been under

way since the mid-seventies to impose, step by step, conditions which will mean intensification of neocolonial exploitation of the resources and labour of the third world. This offensive has gathered strength with the collapse of what was till recently the block of socialist countries, the so called second world, as a countervailing force in international economic and political relations. The first world led by the US is now in a position to use the developments in the second world to enhance its bargaining position and consolidate its hegemony on a global scale, and more especially over the third world.

The rich countries and the institutions controlled by them, which may have played a positive role, to some extent, in augmenting resources for the poor countries during the sustained expansionary phases of the world capitalist system after the end of the second world war, till the mid-seventies, are not now willing to play the same role. This is shown by the so-called aid-weariness, the shrinking of multilateral concessional credits and the stiffening of the conditionalities attached to bilateral as well as multilateral credits to the poor countries. Meanwhile, new and highly profitable investment opportunities have appeared for the transnationals in the Western European community, and in the East European countries. It would appear that World Bank and IMF funds, too, will be committed on a priority basis in the latter area. But the regulation and control mechanism of the rich countries is being worked more and more ruthlessly, against not only vital economic interests and development aims, but even the political sovereignty of the poor countries. The annual meetings of World Bank and the IMF have actually become occasions for laying down, publicly and privately, that help to debt-burdened countries in Africa, Asia and Latin America would be given only if they submit to the 'disciplinary measures', euphemistically called structural adjustment, dictated by the World Bank and IMF. The GATT Round and the trade arrangements which are proposed to be put in place are designed to complement these disciplinary measures.

### Critical role for India

As a result of their political differences and the process of uneven development, the solidarity of the third world has been weak. Instead of acting in concert, these countries have been impelled by narrow, short-term considerations and interests. They are, therefore, exposed to ruthless arm-twisting in return for whatever accommodation might be shown to them. India too has, of late, been adopting an ambivalent role in the global economic and political arena. It has been willing to adjust to the demands of the rich countries on the question of investment measures, intellectual property rights and trade in services.

In order to halt this suicidal drift in policy and return to the path of relatively independent development, major changes in economic policy and management will have to be in a direction away from the adjustments which the rich countries, the international financial institutions and the transnationals have demanded since the early eighties, more insistently since the mid-eighties. There is a need to break the shackles of the conditionalities which were accepted in the early eighties. These came at a time when the IMF loan, under its extended financing facility was negotiated, and which have since been strengthened and enlarged.

In this context, the announcement of the new industrial Policy by the Government on the last day of the Parliament session in May is ominous. Even more ominous is the endorsement by the Cabinet of this policy when it was criticized, not only by democratic opinion, but even by senior leaders of the party in government itself. Quite apart from the implications of the policy proposals themselves, it is a sign to the United States. For all the brave talk of refusing to negotiate bilaterally, the Government wishes to have further time to bring public opinion to its side. It will then judge whether the time is right to talk to the United States bilaterally, or to take up a "neutral" position in the Uruguay talks, as has been suggested to it by the Chief US negotiator.

## *Book Review*

*The political Economy of Unorganised Industry* : **A Study of the Labour Process** by Manjit Singh, Sage, 1990, pp. 234, price Rs. 190/-.

The book begins with a discussion of the limitations of divisions into informal/formal sector or unorganised/organised sector and argues in favour of a detailed study of the labour processes in order to understand the overall functioning-of capital. This argument has been made by others as well. The merit of the present study however, lies in the rigour with which the author has pursued this framework. The study is divided into two parts. Part I, dealing with "Forms and Phases of Growth in Indian Industry" first provides a good summary introduction of the Marxian view of labour process. and origins of capitalist production. Thereafter, the author makes a detailed survey of the writings on Indian path of capitalist growth identifying not only the different forms of production found in India but also their consequences on, as well as the experiences of, workers' resistance in India. Finally, in relation to the Indian scene, agricultural conditions in the state and the political experiences of World Wars, partition and economic planning the author traces the growth of industrial capital in Punjab. Obviously, this makes an excellent perspective for a case study, that of the wollen hosiery industry of Ludhiana.

The author did never overlook the global context of capitalist development. Even in Part II, while going to study a case, he first introduces the hosiery industry in Britain, China and Japan and describes the Indian experience of cotton hosiery industry as relevant. Woolen hosiery as a commodity production was initiated in Ludhiana by Kashmiri women migrants between 1825-30. By the eve of the independence Ludhiana had established a monopoly over the product. Thereafter the export markets opened up, particularly to U.S.S.R. Interestingly, the mode of operation of the U.S.S.R. did only strengthen oligopoly. The industry became largely self-reliant over time and production organisation became complex by including both registered and unregistered units, factory and family-based production, job-work and putting out systems. There was no major change in the technique of production over the past two-and-a-half decades. The basic machinery utilised for hosiery production remained mostly, traditional and manually operated permitting domestic workers. The production processes were decomposed into detailed labour. But, in a detailed analysis Manjit Singh shows that here there are some significant differences in organisation from that of the early capitalism described

by Marx. In the ownership of means of production the hosiery producers of Ludhiana remained part manufacturers and part merchants. The labour recruitment process too adopted a modern putting-out structure. He is of the opinion that among the entire unorganised industries in India hosiery export industry occupies a peculiar position in this respect.

The next two chapters describes the social composition of workers and trade union movement. Touching upon the questions of migrants, female and child labour, rate and mode of wage payments, ownership of means of production, turn-over rates, security etc. the author was able to bring out the basic difficulties faced in extending legal protection and organising the hosiery workers. Interestingly, the personal inquiries by the author revealed that the first trade union organisations in Ludhiana had started among the hosiery workers which later spread to other industries. Ludhiana however, was a late starter and effective trade unionism began only after independence. But the early phase of militancy was soon lost to legalism and factional fights. This chapter concludes with a set of recommendations, not for the government as is usual, but in the form of demands that hosiery trade unions should raise.

The final chapter makes a comparative study of the author's findings with the characterisations made by others about the modern capitalism. Appreciably, the author is well-read in both Indian and international literature in this area. He did certainly succeed in showing the exploitative character of unorganised industries, the well-organised form within the seemingly scattered production and the penetration of the world market into the remote petty-commodity production, as he claims to have done.

Nirmal Sengupta

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